



State of Utah

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ADDENDUM No. 1

Date: September 29, 2008

To: Contractors

From: Brian Bales, Project Manager, DFCM

Reference: Generator Upgrade – Office of the Medical Examiner
Department of Health
DFCM Project No. 08081390

Subject: **Addendum No. 1**

Pages	Addendum Cover Sheet	1 page
	Engineer's Addendum	1 page
	Emergency Electrical Systems Specification	8 pages
	<u>Drawings</u>	<u>11 pages</u>
	Total	21 pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum.

1.1 **SCHEDULE CHANGES:** None

1.2 **GENERAL ITEMS:**

- 1.2.1 Engineer's Addendum - clarifications
- 1.2.2 Emergency Electrical Systems Specification
- 1.2.3 Drawings

Addendum

To: Brian Bales, Project Manager	From: Tony Higgins
Company: DFCM	Date: September 29, 2008
Phone: 538-3417	Address: 4110 State Office Building
Project: Generator Upgrade Medical Examiner	Salt Lake City, UT. 84114

Envision Engineering, PC, has made the following changes for your use and review:

1. EG501 changed general note 1 from 3000lb to 4000lb.
2. EDS101 modified keyed notes 1 & 2.
3. ED201 added keyed note 2 to reflect comments from Brian Bales.
4. ED701 minor note changes to one-line.
5. EP701 changed note to read base tank and minor changes to one-line.
6. EP801 changes to branch panels from series rated to fully rated. Added breaker to branch panel 'EH'.
7. Changed electrical spec 16610 part 2 section 2.3 (M) removed isolating springs and changed to vibration pads. Also part 2 section 2.3 (P) changed fuel take from 48 hrs to 72 hrs.

If you have any further comments or questions please call

Tony Higgins

End of Addendum

SECTION 16610 - EMERGENCY ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.
- B. This section is a Division 16 General Provisions section, and is part of each Division 16 section making reference to emergency electrical systems.

1.2 DESCRIPTION OF WORK:

- A. Types of emergency system components specified in this section include the following:
 - 1. Emergency Diesel Generator Sets
 - 2. Automatic Transfer Switches
 - 3. Exhaust and Fuel Systems
 - 4. Weather Protective Enclosure
 - 5. Remote Annunciator Panel

1.3 QUALITY ASSURANCE:

- A. STANDARDS: Refer to Section 16001 - Electrical General Provisions as applicable.
- B. REQUIREMENTS OF REGULATORY AGENCIES:
 - 1. The electric generating system consists of a prime mover, generator, governor, coupling and all controls which must have been tested as a complete unit on a representative engineering model as required by NFPA 110-1985. The tests, being potentially damaging to the equipment tested, must not be performed on the equipment to be sold, but on a separate prototype model.
 - 2. Conform to N.E.C. and applicable inspection authorities.
 - 3. Transfer switches to be labeled under UL 1008.
- C. SHOP DRAWINGS: Submit dimensioned shop drawings of all emergency electrical system components and accessories including but not necessarily limited to emergency generator, protective enclosure, fuel tank, automatic transfer switch, battery charger, all instruments and accessories, and fuel piping requirements. Show accurately scaled layouts of system components. Submittals shall include complete system interconnection wiring diagrams and manufacturer's warranty form indicating compliance with these specifications.
- D. OWNER'S MANUALS: Four (4) sets of owner's manuals specific to the product supplied must accompany delivery of the equipment. General operating instruction, preventive maintenance, wiring diagrams, schematics and parts exploded views specific to this model must be included.

PART 2 – PRODUCTS

2.1 MANUFACTURERS:

- A. Engine Generator Sets: This engine generator sets and equipment from one of the following:
 - 1. Caterpillar

2. Onan
3. Kohler
4. Smith Detroit Diesel
5. Generac

- B. Automatic Transfer Switches: Provide automatic transfer switches and accessories from one of the following manufacturers:

1. ASCO
2. Onan
3. Russelectric
4. Zenith
5. Kohler
6. Generac

2.2 GENERAL:

- A. Provide emergency electrical system components and specified herein and as shown on the drawings. Provide systems and components capable of start and load transfer within 10 seconds of power outages.
- B. Please note that the generator is to deliver the specified KW rating as indicated on the drawings. Increase rating of generator as required for altitude and temperature ratings as follows:

- | | |
|---------------------------------|---------------------------|
| 1. Altitude: | 5500 Feet Above Sea Level |
| 2. Maximum Ambient Temperature: | 50 Degrees C. |
| 3. Minimum Ambient Temperature: | 0 Degrees C. |

2.3 ENGINE-GENERATOR SET:

- A. Engine: Provide 60 hertz alternating-current standby diesel engine driven generator units of voltage, phase, and capacities indicated. Base rating of electric sets upon operation after deducting power required for output for all necessary operating accessories including radiator fans, fuel pumps, etc. and under environmental conditions specified. Provide electric sets rated and capable of producing KW specified at 0.8 power factor. Certify performance of the electric set series by means of independent testing laboratory tests for full power rating stability, and voltage and frequency regulation. Provide stationary, water-cooled, full diesel, compression ignition, four stroke cycle, multi-cylinder or single cylinder, in-line or V-type engine. Arrange engine for direct connection to an alternator current generator; do not exceed engine speed of 1800 RPM at full rated load.
- B. Alternator: Provide direct connected, engine driven, single bearing, synchronous type alternator with electrical characteristics indicated.
1. Instantaneous Voltage Dip: Limit voltage dip of engine generator set to less than 30 percent upon application of full rated power. Accomplish voltage regulation by means of a solid state voltage regulator. Inherently regulated machines are acceptable in sizes under 6 KW.
 - a. Stability: 1 percent of its mean value at any constant load from no load to full load for solid state regulators.
 - b. Regulation: Plus or minus 2 percent maximum so load to full load for solid state regulators.
 2. Where more than 40 percent of the load is comprised of rectifiers and/or thyristors, provide power to voltage regulator by means of ceramic type permanent magnet pilot

excitor, capable or 80 percent automatic controlled SCR/Thyristor loading.

- C. Lubrication System: Equip engine with a pressure lubricated system. Provide spin-on type full flow lubricating oil filter. Equip filters with bypass valve to insure oil circulation if filters are clogged. Include dipstick oil level indicator.
- D. Air Cleaner: Provide reusable element air cleaner of size and type recommended by the engine manufacturer.
- E. Starting: Equip engine with a 12 volt electric starting motor of sufficient capacity to crank the engine at a speed which will allow full diesel starting of the engine. Disengage starter automatically when engine starts.
- F. Batteries: Provide rack-mounted, heavy duty, lead acid battery set of adequate voltage and amperage capacity to start and operate the engine. Provide sufficient capacity for cranking the engine for at least 30 seconds at firing speed with capacity for starting the diesel engine a minimum of four times. Provide capacity and voltage recommended by engine manufacturer. Provide all intercell and connecting battery cables as required.
- G. Battery Charger: Provide an automatic dual rate battery charger manufactured by the engine-generator set supplier. The automatic equalizer system shall monitor and limit the charge current to 10 amps. The output voltage is to be determined by the charge current rate. The charger must have a maximum open circuit voltage of 35 volts and be protected against a reverse polarity connection. The battery charger is to be factory installed on the generator set. Due to line voltage drop concerns, a battery charger mounted in the transfer switch will be unacceptable.
- H. Water Jacket Heater: Equip engine with thermostatically controlled water jacket heater. The heater voltage shall be 120 volt single phase for smaller units or 480 volt single-phase for larger units in KW rating as recommended by the manufacturer. Make all connections to water jacket heaters.
- I. Engine Instruments: Provide a unit mounted console with the following gauges:
 - 1. Run-stop-remote switch
 - 2. Remote starting, 12-volt, 2 wire
 - 3. Coolant temperature gauge
 - 4. Field circuit breaker
 - 5. DC voltmeter
 - 6. Running time meter
 - 7. Lamp test switch
 - 8. Engine preheat switch
 - 9. Oil pressure gauge
 - 10. Fault reset switch
 - 11. Cycle cranking
 - 12. Time delay start/stop
 - 13. 7-Light engine monitor with individual 1/2 amp relay signals and a common alarm contact for each of the following conditions:
 - a. Run
 - b. Pre-warning for low oil pressure
 - c. Pre-warning for high coolant temp
 - d. Low oil pressure shutdown
 - e. High coolant temperature shutdown
 - f. Overcrank shutdown
 - g. Overspeed shutdown

- J. Exhaust System: An exhaust silencer shall be provided of the size as recommended by the manufacturer and shall be of critical grade. Wrap the entire exhaust system, from manifold to roof or wall penetration with exhaust insulation. The silencer(s) shall be mounted on the weather protective enclosure with the use of a flexible, seamless, stainless steel exhaust connection and rain cap. All components must be properly sized to assure operation without excessive back pressure when installed.
- K. Engine Protection Devices: Provide the following engine protection devices with indicating light annunciation for each device:
 - 1. Low-Oil pressure cut-out
 - 2. High air temperature cut-out
 - 3. Overspeed Cut-out
- L. Mounting: Equip electric set with a suitable base for mounting on a level surface.
- M. Isolators: Provide vibration pads between the electric set and base. Vibration pads between the engine and the base are acceptable if in accordance with manufacturer's recommendations.
- N. Fuel: Provide engine capable of satisfactory performance on commercial grade diesel fuel as recommended by the manufacturer.
- O. Governor: Equip engine with an electronic governor to maintain frequency within the limits as required to properly serve computer and electronic equipment.
- P. Fuel System:
 - 1. Equip engine with primary and secondary fuel filters with replaceable elements, and an engine driven fuel pump, all mounted on the engine. Provide fuel system piping of size and type recommended by the engine manufacturer.
 - 2. The fuel system shall include a base-mounted fuel tank sized for 72 hours of run time at full load. It shall have the structural integrity to support the engine-generator set. Minimum features shall include all welded double-wall construction, a lockable fuel filler cap, fuel gauge, fuel line check valve and fittings for fuel supply, return, fill and vent. This tank must be supplied and warranted by the engine-generator set manufacturer and be factory installed. The tank shall be provided with a complete leak detection system and control panel.
- Q. Weather Protective Enclosure: The engine-generator set shall be factory enclosed in a Level 2 sound rated, heavy gauge steel enclosure constructed with corner posts, coated with electro statically applied zinc and finished with baked enamel paint. The enclosure is to have large, hinged doors to allow access to the engine, alternator and control panel. Each door is to be fitted with stainless steel, lockable hardware with identical keys. Padlocks do not meet this specification.
- R. Main Line Circuit Breaker: Provide a main line circuit breaker in rating as indicated on the drawings, but in no case greater than that recommended by the generator manufacturer. Provide a breaker with AIC rating as required to safely interrupt and clear the maximum available fault current of the alternator to meet all NEC requirements.

2.4 AUTOMATIC TRANSFER SWITCHES

- A. General: Automatic transfer switches shall be furnished by the manufacturer of the engine-generator set so as to maintain system compatibility and local service responsibility for the complete emergency power system. It shall be listed by Underwriter's Laboratory, Standard 1008 with circuit breaker protection. Representative production samples of the transfer switch

supplied shall have demonstrated through tests the ability to withstand at least 10,000 mechanical operation cycles. One operation cycle is the electrically operated transfer from normal to emergency and back to normal. Wiring must comply with NEC table 373-6(b).

- B. Ratings & Performance: Refer to electrical drawings for switch rating requirements. Where transfer switch is fed from an upstream overcurrent protection device having ground fault protection, provide a four pole unit with switched neutral.
- C. Construction:
 - 1. The transfer switch shall be double throw construction, positively electrically and mechanically interlocked to prevent simultaneous closing and mechanically held in both normal and emergency positions. Independent break before make action shall be used to positively prevent dangerous source to source connections. When switching the neutral, this action prevents the objectionable ground currents and nuisance ground fault tripping that can result from overlapping designs. The transfer switch shall be approved for manual operation. The electrical operating means shall be by electric solenoid. Every portion of the contactor is to be positively mechanically connected. No clutch or friction drive mechanism is allowed, and parts are to be kept to a minimum. This transfer switch shall not contain integral overcurrent devices in the main power circuit, including molded case circuit breakers or fuses.
 - 2. The transfer switch electrical actuator shall have an independent disconnect means to disable the electrical operation during manual switching. Maximum electrical transfer time in either direction shall be 160 milliseconds, exclusive of time delays. Main switch contacts shall be high pressure silver alloy contacts to resist burning and pitting for long life operation.
 - 3. There shall be one SPDT, 10 ampere, 250 volt auxiliary switch on both normal and emergency sides, operated by the transfer switch. Full rated neutral bar with lugs for normal, emergency and load conductors shall be provided inside the cabinet.
- D. Controls:
 - 1. All control equipment shall be mounted on the inside of the cabinet door in a metal lockable enclosure with transparent safety shield to protect all solid state circuit boards. This will allow for ease of service access when main cabinet lockable door is open, but to prevent access by unauthorized personnel. Control boards shall have installed cover plates to avoid shock hazard while making control adjustments. The solid state voltage sensors and time delay modules shall be plug-in circuit boards with silver or gold contacts for ease of service.
 - 2. A solid state undervoltage sensor shall monitor all phases of the normal source and provide adjustable ranges for field adjustments for specific applications needs. Pick-up and drop-out settings shall be adjustable from a minimum of 70% to a maximum of 95% of nominal voltage. A utility sensing interface shall be used, stepping down line voltage to 24VAC, helping to protecting the printed circuit board from voltage spikes and increasing personnel safety when troubleshooting.
 - 3. Signal the engine-generator set to start in the event of a power interruption. A set of contacts shall close to start the engine and open for engine shutdown. A solid state time delay start (adjustable, .1 to 10 seconds) shall delay this signal to avoid nuisance start-ups on momentary voltage dips or power outages.
 - 4. Transfer the load to the engine-generator set after it reached proper voltage (adjustable, 70% to 90%) and frequency (adjustable, 80% to 90%). A solid state time delay (adjustable, 5 seconds to 3 minutes) shall delay this transfer to allow the engine-generator to warm-up before application of load. There shall be a switch to bypass this warm-up timer when immediate transfer is required.
 - 5. Retransfer the load to the line after normal power restoration. A return to utility timer (adjustable, 1 to 30 minutes) shall delay this transfer to avoid short term normal power restoration.

6. The operating power for transfer and retransfer shall be obtained from the source to which the load is being transferred. Controls shall provide an automatic retransfer of the load from emergency to normal if the emergency source fails with the normal source available.
7. Signal the engine-generator to stop after the load retransfers to normal. A solid state engine cool down timer (adjustable, 1 to 30 minutes) shall permit the engine to run unloaded to cool down before shutdown.
8. Provide an engine minimum run timer (adjustable, 5 to 30 minutes) to ensure an adequate engine run period.
9. Provide a solid state plant exercise clock to set the day and time of generator set exercise period. Actual time of day and exercise time shall be displayed. The clock shall have a one week cycle and be powered by the load side of the transfer switch. A battery must be supplied to maintain the circuit board energized when the load side of the transfer switch is de-energized. Include a switch to select if the load will transfer to the engine-generator set during the exercise period.
10. The transfer switch shall have a time delay neutral feature to provide a time delay (adjustable, .1 to 10 seconds) during the transfer in either direction, during which time the load is isolated from both power sources. This allows residual voltage components of motors or other inductive loads (such as transformers) to decay before completing the switching cycle. A switch will be provided to bypass this feature when immediate transfer is required.
11. Front mounted controls shall include a selector switch to provide for a NORMAL TEST mode with full use of time delays, FAST TEST mode which bypasses all time delays to allow for testing the entire system in less than one minute, or AUTOMATIC mode to set the system for normal operation.
12. Provide bright lamps to indicate the transfer switch position in either UTILITY (white) or EMERGENCY (red). A third lamp is needed to indicate STANDBY OPERATING (amber). These lights must be energized from utility or the engine-generator set.
13. Provide manual operating handle to allow for manual transfer. This handle must be mounted inside the lockable enclosure so accessible only by authorized personnel.
14. Provide a safety disconnect switch to prevent load transfer and automatic engine start while performing maintenance. This switch will also be used for manual transfer switch operation.
15. Provide LED status lights to give a visual readout of the operating sequence. This shall include utility on, engine warm-up, engine warm-up bypass, standby voltage "ready", standby frequency "ready", standby on, transfer to standby, return to utility, engine cool down, engine minimum run and fast test mode.

2.5 REMOTE ANNUNCIATOR PANEL:

- A. General: Provide remote annunciator panel with the following features:
 1. Provide visual indication of 20 separate alarm conditions. The panels shall monitor and be labeled as follows:
 - a. GENSET RUNNING (Green)
 - b. HIGH TEMP (Amber)
 - c. LOW OIL PRESS (Amber)
 - d. LOW TEMP (Amber)
 - e. LOW FUEL (Amber)
 - f. HIGH TEMP (Red)
 - g. LOW OIL PRESS (Red)
 - h. OVERCRANK (Red)
 - i. OVERSPEED (Red)
 - j. NOT IN AUTO (Red-flashing)
 - k. BLANK (Red)
 - l. BLANK (Red)

2. Switchable lenses and alarm horn function.
3. Removable legend plates for engraving alarm or status labels.
4. Alarm silence button on annunciator resets circuit for any subsequent fault condition whether or not initial fault has been cleared.
5. Designed for operation at 24 VDC, with negative ground signals.
6. Stainless steel front panel for flush or surface mounting. Refer to drawings for mounting requirements.
7. Knockouts for conduit connections.
8. Replaceable 25,000 hour high intensity lamps for easy readability, high reliability, and low power consumption.
9. Lamp Test/Alarm silence switch.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Install emergency electrical systems in accordance with manufacturer's written instructions, applicable requirements of NEC, NEMA standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

3.2 MOUNTING:

A. Generator Sets:

1. Housekeeping Pads: Unless noted otherwise, provide 6" high steel reinforced concrete pad for generator sets. Adjust height of pad and steel reinforce in accordance with all manufacturer's recommendations - verify prior to installation. Refer to "Concrete Bases" under Section 16001 - Electrical General Provisions.

B. Transfer Switches:

1. Anchor switches firmly to walls and structural surfaces.
2. Housekeeping Pads: Provide housekeeping pads in accordance with "Concrete Bases" under Section 16001 - Electrical General Provisions.

3.3 FACTORY TESTING:

- A. Before shipment of the equipment, the engine-generator set shall be tested under rated load and power factor for performance and proper functioning of control and interfacing circuits. Tests shall include:
 1. Verifying all safety shutdowns are functioning properly.
 2. Single step load pick-up per NFPA 110-1985, Paragraph 5-13.2.6.
 3. Transient and voltage dip responses and steady state voltage and speed (frequency) checks.

3.4 SERVICE:

- A. Supplier of the electric set and associated items shall have permanent service facilities in this trade area. These facilities shall comprise a permanent force of factory trained service personnel on 24 hour call, experienced in servicing this type of equipment, providing warranty and routine maintenance service to afford the owner maximum protection. Delegation of this service responsibility for any of the equipment listed herein will not be considered fulfillment of these specifications. Service contracts shall also be available.

3.5 WARRANTY:

- A. The standby electric generating system components, complete engine-generator, instrumentation panel, and automatic transfer switch shall be warranted by the manufacturer against defective materials and factory workmanship for a period of one year. Such defective parts shall be repaired or replaced at the manufacturer's option, free of charge for travel and labor. The warranty period shall commence when the standby power system is first placed into service. Multiple warranties for individual components (engine, alternator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. Also, in the judgment of the specifying authority, the manufacturer supplying the warranty for the complete system must have the financial strength and technical expertise with all components supplied to provide adequate warranty support.

3.6 CHECKOUT & STARTUP:

- A. The supplier of the electric generating plant and associated items covered herein shall provide factory trained technicians to checkout the completed installation and to perform an initial startup inspection to include:
 - 1. Ensuring the engine starts (both hot and cold) within the specified time.
 - 2. Verification of engine parameters within specification.
 - 3. Set no load frequency and voltage.
 - 4. Test all automatic shutdowns of the engine-generator.

3.7 LOAD BANK TEST:

- A. Conduct a load bank test to the rated KW of the generator for a minimum of four hours.

3.8 MISCELLANEOUS:

- A. Provide engine lubricating oil, fuel, engine coolant, filters, etc. for system testing. After testing, refill all fluids to capacity for final acceptance.
- B. Provide line voltage wiring for battery chargers, heaters, and leak detection system.
- C. Provide low voltage control and monitoring wiring for all transfer switches and remote annunciators as may be specified.

END OF SECTION 16610

STATE MEDICAL EXAMINER'S
GENERATOR UPGRADE
UNIVERSITY OF UTAH CAMPUS
48 NORTH MEDICAL DRIVE
CONSTRUCTION DOCUMENT SET
SEPTEMBER 8, 2008
DFCM PROJECT # 08081390



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ELECTRICAL SHEET INDEX

EG001	SYMBOL SCHEDULE
EG501	DETAILS
EDS101	SITE DEMOLITION PLAN
ED101	FIRST FLOOR DEMOLITION PLAN
ED201	SECOND FLOOR DEMOLITION PLAN
ED701	ONE-LINE DEMOLITION PLAN
ES101	SITE PLAN
EP101	FIRST FLOOR POWER PLAN
EP701	ONE-LINE DIAGRAM
EP801	SCHEDULES



D

C

B

A

WIRING DEVICE SYMBOLS			
SYMBOL	DESCRIPTION	MOUNTING	REMARKS
\$	SINGLE-POLE TOGGLE SWITCH	+48"	
\$ ^o	SINGLE-POLE TOGGLE SWITCH	+48"	SUBSCRIPT KEYS SWITCH TO FIXTURES CONTROLLED.
\$ ₂	DOUBLE-POLE TOGGLE SWITCH	+48"	
\$ ₃	THREE-WAY TOGGLE SWITCH	+48"	
\$ ₄	FOUR-WAY TOGGLE SWITCH	+48"	
\$ _K	KEY-OPERATED SINGLE-POLE TOGGLE SWITCH	+48"	
\$ _P	SINGLE-POLE TOGGLE SWITCH WITH PILOT LIGHT	+48"	
\$ _{DIM}	DIMMER SWITCH	+48"	RATE DIMMER SWITCH FOR MAXIMUM POSSIBLE WATTAGE
\$ _{TIM}	TIMER SWITCH	+48"	
\$ ₂ \$	(2) SINGLE-POLE TOGGLE SWITCH	+48"	DUAL LEVEL SWITCH OUTBOARD LAMPS SEPARATELY FROM INBOARD LAMPS.
\$ _{LV}	LOW VOLTAGE MOMENTARY CONTACT SWITCH	+48"	
\$ _{3PM}	3-POSITION MOMENTARY CONTACT SWITCH	+48"	REFER TO DETAIL UP-ON; CENTER-NEUTRAL; DOWN-OFF
\$ _{3PN}	3-POSITION MAINTAINED CONTACT SWITCH	+48"	UP-ON; CENTER-OFF; DOWN-ON
●C/W	OCCUPANCY SENSOR	AS NOTED	CEILING MOUNTED WITH SUBSCRIPT 'C'; WALL-MOUNTED WITH SUBSCRIPT 'W'
⊖	SPLIT-WIRED DUPLEX RECEPTACLE	+18"	
⊖	SIMPLEX RECEPTACLE	+18"	
⊖	DUPLEX RECEPTACLE	+18"	
⊖	FOURPLEX RECEPTACLE	+18"	
⊖	125/250V RECEPTACLE	+18"	RANGE -- NEMA 14-50R DRYER -- NEMA 14-30R
⊖	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE	+18"	
⊖	GROUND FAULT CIRCUIT INTERRUPTER FOURPLEX RECEPTACLE	+18"	
⊖	EMERGENCY DUPLEX RECEPTACLE	+18"	
⊖	EMERGENCY FOURPLEX RECEPTACLE	+18"	
⊖ ---	MULTI-OUTLET ASSEMBLY	4" ABOVE BACKSPLASH	
⊖	POWER / TELEPHONE POLE	FLOOR/CEILING	
⊖	CORD DROP WITH DUPLEX RECEPTACLE	+18"	REFER TO DETAIL
⊖ (5-20R)	SPECIAL PURPOSE OUTLET	+18"	SUBSCRIPT IN PARENTHESIS INDICATES NEMA CONFIGURATION IF SHOWN. REFER TO DRAWINGS AND/OR EQUIPMENT SCHEDULES. CONFIRM EXACT CONFIGURATION WITH OWNER PRIOR TO INSTALLATION.

GEAR AND CONTROL SYMBOLS			
SYMBOL	DESCRIPTION	MOUNTING	REMARKS
\$ _T	MANUAL STARTER WITH THERMAL OVERLOAD(S)	AT EQUIPMENT	
⊖	ELECTRIC MOTOR		
⊖	NON-FUSED DISCONNECT SWITCH	+60"	
⊖	FUSED DISCONNECT SWITCH	+60"	
⊖	CIRCUIT BREAKER AND ENCLOSURE	+60"	
⊖	MAGNETIC STARTER	+60"	
⊖	COMBINATION MAGNETIC STARTER / NON-FUSED DISCONNECT	+60"	
⊖	COMBINATION MAGNETIC STARTER / FUSED DISCONNECT	+60"	
⊖	COMB. MAGNETIC STARTER / MOTOR CIRCUIT PROTECTOR (MCP)	+60"	
⊖	COMB. VARIABLE FREQUENCY DRIVE / MOTOR CIRCUIT PROTECTOR (MCP)	FLOOR OR WALL AS SPECIFIED	TOP AT +12" IF WALL MOUNTED
⊖	REDUCED VOLTAGE STARTER	FLOOR OR WALL AS SPECIFIED	TOP AT +12" IF WALL MOUNTED
⊖	LOAD CENTER (SURFACE-MOUNTED)	TOP AT +12"	14"W X 3"D
⊖	LOAD CENTER (FLUSH-MOUNTED)	TOP AT +12"	14"W X 3"D
⊖	LIGHTING AND APPLIANCE PANELBOARD (SURFACE-MOUNTED)	TOP AT +12"	20"W X 6"D
⊖	LIGHTING AND APPLIANCE PANELBOARD (FLUSH-MOUNTED)	TOP AT +12"	20"W X 6"D
⊖	POWER DISTRIBUTION PANELBOARD	WALL	THESE SYMBOLS ARE GENERAL IN NATURE AND MAY VARY IN SIZE AND SHAPE TO SUIT APPLICATION. CROSS HATCHING INDICATES "MAIN PANELBOARD OR SWITCHBOARD" NAME IS INDICATED IN SEH1-QUOTES (I.E. 'L2A', 'MDP')
⊖	SWITCHBOARD	FLOOR	
⊖	METER BASE	TOP AT +12"	
⊖	OPEN - STOP - CLOSE SWITCH	+60"	FURNISH SWITCH UNLESS FURNISHED BY ANOTHER DIVISION. INSTALL AND CONNECT COMPLETE. REFER TO RELATED SPECIFICATION SECTIONS.
⊖	HVAC THERMOSTAT	+60"	PROVIDED BY DIVISION 15000 UNO.
⊖	HAND - OFF - AUTO SWITCH	+60"	
⊖	GROUND FAULT PROTECTION		

ELECTRICAL SYMBOL SCHEDULE GENERAL NOTES

1. MOUNT ALL OUTLETS, DEVICES, AND EQUIPMENT AT HEIGHTS INDICATED BELOW, UNLESS NOTED OTHERWISE ON THE DRAWINGS. UNLESS NOTED OTHERWISE, HEIGHTS ARE GIVEN FROM FINISHED FLOOR TO CENTER OF OUTLET BOX.
2. WHERE OUTLETS, DEVICES, AND EQUIPMENT ARE NOTED BY SUBSCRIPTS, REFER TO ABBREVIATION SCHEDULE FOR DEFINED REQUIREMENTS.
3. WHERE OUTLETS, DEVICES AND EQUIPMENT ARE NOTED BY THE SUBSCRIPT 'A', MOUNT AT 4" ABOVE COUNTER. IF COUNTER HAS A BACK SPLASH, MOUNT AT 4" ABOVE BACK SPLASH. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS AND COORDINATE WITH CASEWORK SUPPLIER.
4. NOT ALL ELECTRICAL SYMBOLS MAY BE USED.

GENERAL SYMBOLS		
SYMBOL	DESCRIPTION	REMARKS
⊖	KEYED NOTE	
⊖	DETAIL REFERENCE	TOP NUMBER INDICATES DETAIL NUMBER; BOTTOM LETTER-NUMBER INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN; WHERE NOT SPECIFICALLY REFERENCED, DETAIL IS GENERAL IN NATURE AND SHALL APPLY WHERE APPLICABLE.
⊖	ELEVATION REFERENCE	TOP NUMBER INDICATES ELEVATION NUMBER; BOTTOM LETTER-NUMBER INDICATES WHERE ELEVATION IS SHOWN.
⊖	SECTION REFERENCE	TOP NUMBER INDICATES SECTION NUMBER; BOTTOM LETTER NUMBER INDICATES WHERE SECTION IS SHOWN.
⊖	ARCHITECTURAL ROOM NUMBER	
⊖	EQUIPMENT NAME / NUMBER	TOP NUMBER ABBREVIATES EQUIPMENT NAME OR TYPE; BOTTOM NUMBER INDICATES EQUIPMENT NUMBER. REFER TO EQUIPMENT SCHEDULE.
⊖	REVISION NUMBER	USED TO DENOTE CHANGES EITHER ISSUED BY ADDENDUM OR DURING CONSTRUCTION AND TO DENOTE RECORD DRAWING CHANGES.
⊖	BREAKLINE	USED TO BREAK DRAWINGS.

BRANCH CIRCUITING SYMBOLS		
SYMBOL	DESCRIPTION	REMARKS
⊖	1 CIRCUIT, 2 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	ARROWS: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS REQUIRED.
⊖	2 CIRCUIT, 3 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	SHORT CROSS LINES: NUMBER OF SHORT CROSS LINES INDICATES NUMBER OF PHASE, TRAVELER, AND/OR SWITCHED CONDUCTORS REQUIRED IF GREATER THAN 1 (ONE).
⊖	3 CIRCUIT, 4 WIRE BRANCH CIRCUIT HOME RUN TO PANEL	LONG CROSS LINES: NUMBER OF LONG CROSS LINES INDICATES NUMBER OF NEUTRAL CONDUCTORS REQUIRED FOR MULTI-WIRE HOME RUNS.
⊖	MULTIPLE WIRE BRANCH CIRCUITING BETWEEN FIXTURES, SWITCHES, DEVICES, ETC.	EQUIPMENT GROUND AND ISOLATED GROUND CONDUCTORS: EQUIPMENT GROUND AND ISOLATED GROUND CONDUCTORS ARE NOT SHOWN, BUT ARE REQUIRED AS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.
⊖	BRANCH CIRCUITING (UNO) TURNED UP OR TOWARDS OBSERVER.	
⊖	BRANCH CIRCUITING (UNO) TURNED DOWN OR AWAY FROM OBSERVER.	
⊖	BRANCH CIRCUITING (UNO) CONTINUATION	
⊖	CONDUIT STUB-IN	CAP AND MARK
⊖	INCOMING SERVICE	
⊖	JUNCTION BOX	MOUNT AS NOTED. SUBSCRIPT 'B' INDICATES TO PROVIDE A FLOOR BOX WITH BLANK COVERPLATE

PROPOSED CONSTRUCTION PHASING:

1. REMOVE THE EXISTING 315 KVA TRANSFORMER FROM EXISTING PANEL '41A' AND MOVE TRANSFORMER TO NEW LOCATION AND RECONNECT TRANSFORMER TO PANEL '41A'.
2. CONTRACTOR TO INSTALL NEW GENERATOR, DISTRIBUTION PANEL 'DPH', 'ATS2', BRANCH PANELS 'EH', 'EL' AND 15 KVA TRANSFORMER.
3. PROVIDE CONDUIT ONLY FROM NEW GENERATOR TO 'ATS1' AND 'ATS2', FROM 'ATS2' TO 'DPH', FROM 'DPH' TO EXISTING 150 KVA TRANSFORMER FEEDING 'DPL', FROM 'DPH' TO EXISTING LOADS BEING FEED FROM 'MDP', FROM 'ATS1' TO NEW PANEL 'EH'.
4. CLOSE MAIN BREAKER IN 'MDP'. INSTALL NEW 600 AMP BREAKER, PROVIDE CONDUCTORS FROM 'MDP' TO 'ATS2', FROM 'ATS2' TO 'DPH', FROM 'DPH' TO 150 KVA TRANSFORMER FEEDING 'DPL', FROM NEW GENERATOR TO 'ATS2' AND 'ATS1', FROM 'ATS1' TO 'EH', RE-ENERGIZE 'MDP'.
5. INSTALL FEEDERS FROM 'EH' TO NEW 15 KVA TRANSFORMER, FROM 15 KVA TRANSFORMER TO 'EL'.
6. MOVE CIRCUITS FROM 'EH' AND 'LE' TO 'EH' AND 'EL'.
7. CLOSE MAIN BREAKER IN 'MDP' AND MOVE CONDUCTORS FEEDING EXISTING PANELS BEING FEED FROM 'MDP' TO 'DPH'.

NOTE: SEQUENCE OF EVENTS ARE INTENDED TO KEEP POWER OUTAGES TO A MINIMUM. ELECTRICAL CONTRACTOR MAY THROUGH ON-SITE INSPECTION DETERMINE THAT MORE OUTAGES MAY BE REQUIRED. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL REQUIRED OUTAGES FOR THE INSTALLING OR THE CONNECTING OF ANY ELECTRICAL EQUIPMENT WITH THE OWNER AND PROVIDE 12 HRS NOTICE TO THE OWNER PRIOR TO ANY REQUIRED ELECTRICAL OUTAGES.

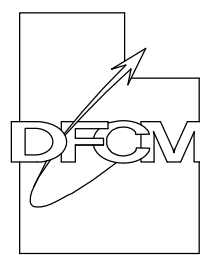
ELECTRICAL CONTRACTOR MAY RE-USE ANY EXISTING CONDUIT IN THE INSTALLATION OF NEW ELECTRICAL EQUIPMENT BUT MAY NOT SPLICE ANY CONDUCTORS, SPLICING WILL NOT BE ALLOWED. IF EXISTING CONDUCTORS IN THE EVENT OF RE-FEEDINGS ARE NOT OF THE REQUIRED LENGTH THAN NEW CONDUCTORS MUST BE SUPPLIED.

ABBREVIATION SCHEDULE			
NOTE: NOT ALL ABBREVIATIONS MAY BE USED.			
A	ABOVE COUNTER	ISO	ISOLATED
A	AMP OR AMPS	KVA	KILO VOLT AMPERES
ADJ	ADJACENT	KW	KILOWATTS
AFF	ABOVE FINISHED FLOOR	LFMC	LIQUID-TIGHT METAL CONDUIT
AHJ	AUTHORITY HAVING JURISDICTION	LFNC	LIQUID-TIGHT NON-METAL CONDUIT
AL	ALUMINUM	MCA	MINIMUM CIRCUIT AMPS
C	CONDUIT	MLO	MAIN LUGS ONLY
CB	CIRCUIT BREAKER	N.C.	NORMALLY CLOSED
CKT	CIRCUIT	N.I.C.	NOT IN CONTRACT
C.O.S	CONVENIENCE OUTLETS	NL	NIGHT LIGHT
CU	COPPER	N.O.	NORMALLY OPEN
EA	EACH	O.C.	ON CENTER(S)
ELEC	ELECTRICAL	OC	OVER CURRENT PROTECTION
EH	EMERGENCY	QTY	QUANTITY
EHT	ELECTRIC METALLIC TUBING	R	REMOVE
EHT	ELECTRIC NON-METALLIC TUBING	REQ.	REQUIREMENTS
EQUIP	EQUIPMENT	RMC	RIGID METAL CONDUIT
ENC	ELECTRIC WATER COOLER	RNC	RIGID NON-METALLIC CONDUIT
E, EX	EXISTING	RR	REMOVE AND RELOCATE
EXP	EXPLOSION PROOF	SS	SURGE SUPPRESSION
FA	FIRE ALARM	SCP	SECURITY CONTROL PANEL
FACP	FIRE ALARM CONTROL PANEL	TR	TAMPER RESISTANT
FLA	FULL LOAD AMPS	TYP	TYPICAL
PMC	FLEXIBLE METAL CONDUIT	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
FOB	FREIGHT ON BOARD	UF	UNDER FLOOR
GND	GROUND CONDUCTOR	UG	UNDERGROUND
HOA	HAND-OFF-AUTO	UNO.	UNLESS NOTED OTHERWISE
HP	HORSE POWER	W	WITH
IG	ISOLATED GROUND	WP	WEATHER PROOF
IMC	INTERMEDIATE METAL CONDUIT	XRFR	TRANSFORMER
INS	INSULATED		

GENERAL PROJECT NOTES:

1. DIVISION 16000 CONTRACTOR IS RESPONSIBLE FOR READING AND APPLYING WHAT IS IN THE SPECIFICATIONS TO THIS PROJECT. ANYTHING THAT IS NOT INCLUDED ON THE PROJECT THAT IS CALLED OUT IN THE SPECIFICATION SHALL BE LISTED ON THE SUBSTANTIAL COMPLETION PUNCHLIST. THE CONTRACTOR WILL BE REQUIRED TO REMEDY THESE DEFICIENCIES. THERE WILL BE NO EXCEPTIONS.
2. THE CONTRACTOR MAY SCHEDULE A PRE-CONSTRUCTION MEETING, AT THEIR DISCRETION WITH THE ELECTRICAL ENGINEER AND REVIEW THE DRAWINGS AND SPECIFICATIONS. THE MEETING SHALL BE A MAXIMUM OF ONE HOUR AND SHALL TAKE PLACE AT THE ENGINEER'S OFFICE.
3. THE FOLLOWING ITEMS ARE SOME OF THE REQUIREMENTS THAT ARE LISTED IN THE SPECIFICATIONS, THESE ITEMS DO NOT REPRESENT ALL ITEMS AND THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL REQUIREMENTS OF THE SPECIFICATIONS:
 - A. INSULATED THROAT CONNECTORS OR PLASTIC BUSHINGS SHALL BE UTILIZED FOR ALL CONDUIT SIZES USED ON THIS PROJECT.
 - B. A #10 AWG NEUTRAL CONDUCTOR WILL BE PROVIDED FOR ALL FLUORESCENT LIGHTING CIRCUITS.
 - C. THE CONTRACTOR IS RESPONSIBLE FOR UPSIZING CONDUCTORS FOR VOLTAGE DROP PER THE NEC REGARDLESS OF WHETHER IT IS SHOWN ON THE PLANS OR NOT.
 - D. THE CONTRACTOR SHALL LABEL ALL ELECTRICAL EQUIPMENT AS IT IS CALLED OUT IN THE SPECIFICATIONS.
 - E. THE CONTRACTOR SHALL PROVIDE SEISMIC SUPPORT AND BRACING FOR ALL ELECTRICAL EQUIPMENT AS REQUIRED BY LOCAL AND NATIONAL CODE.
4. THE CONTRACTOR SHALL FOLLOW THE PANELBOARD SCHEDULES AS INDICATED IN THE DRAWINGS. EACH CIRCUIT BREAKER HAS BEEN ASSIGNED A SPECIFIC AREA OF THE BUILDING. NO DEVIATION WILL BE ALLOWED WITHOUT THE APPROVAL FROM THE ELECTRICAL ENGINEER.
5. THE CONTRACTOR SHALL INSTALL PROPER WIRE SIZE AS CALLED OUT ON THE PANELBOARD SCHEDULES. HOWEVER, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE WIRE IS LARGE ENOUGH FOR VOLTAGE DROP.
6. THE CONTRACTOR SHALL VERIFY ALL MECHANICAL OVERCURRENT DEVICES FOR THE ACTUAL MECHANICAL EQUIPMENT SUPPLIED ON THE JOB, PRIOR TO RELEASE OF ANY ELECTRICAL DISTRIBUTION EQUIPMENT. CONTACT THE ELECTRICAL ENGINEER WITH ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING THE BID, AND SHALL EXAMINE ALL PHYSICAL CONDITIONS WHICH MAY BE MATERIAL TO THE PERFORMANCE OF HIS WORK. NO EXTRA PAYMENTS WILL BE ALLOWED TO THE CONTRACTOR AS A RESULT OF EXTRA WORK MADE NECESSARY BY HIS FAILURE TO DO SO. ANY CASE OF DISCREPANCY OR LACK OF CLARITY SHALL BE PROMPTLY IDENTIFIED TO THE OWNER'S REPRESENTATIVE AND THE ENGINEER FOR CLARIFICATION.
8. THE CONTRACTOR SHALL MAKE SURE THAT ALL BRANCH CIRCUITS THAT ARE AFFECTED BY THIS PROJECT ARE NOT OVERLOADED. PROVIDE ADDITIONAL BRANCH CIRCUITS FROM ELECTRICAL PANELS AS NECESSARY TO COMPLY WITH THE BRANCH CIRCUIT LOADING REQUIREMENTS. PROVIDE ALL MATERIAL AND LABOR AS NECESSARY FOR A COMPLETE AND OPERATING SYSTEM.
9. PROVIDE UPDATED, TYPED PANELBOARD SCHEDULE(S) TO REFLECT ALL THE CHANGES MADE INCLUDING EXISTING LOADS. THE EXISTING LOADS SHALL BE NAMED THE SAME AS LISTED ON THE EXISTING PANELBOARD SCHEDULE.
10. AN AREA FOR CONSTRUCTION STAGING AND PARKING PASSES WILL BE PROVIDED AS REQUIRED.

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ISSUE TYPE: -

ISSUE DATE: - 6-26-08

DFCM PROJECT NO: 08081390

CAD PROJECT NO:

CAD DWG FILE: 2008-092.00

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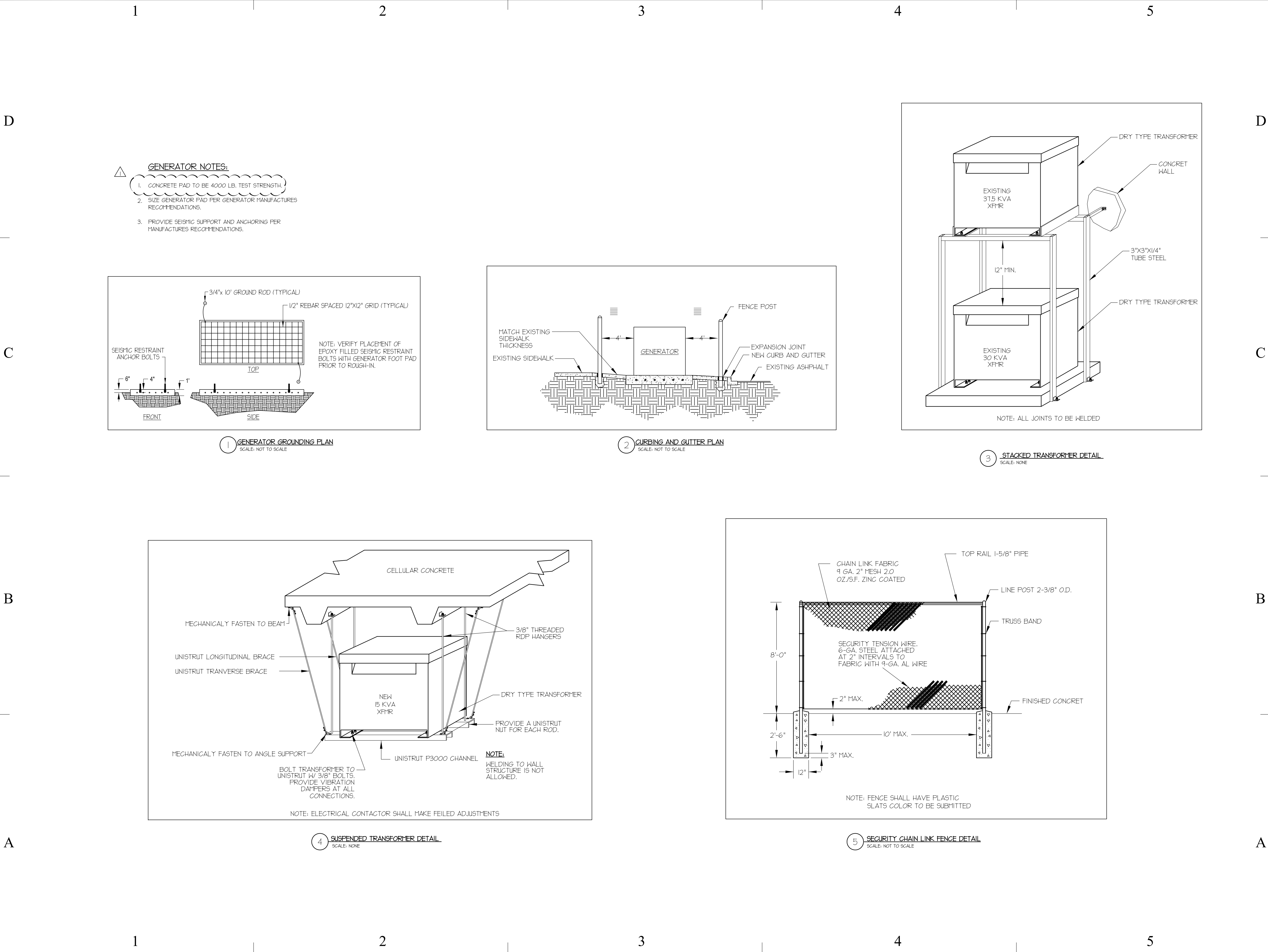
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SYMBOL
SCHEDULE

SHEET NUMBER

EG001

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REGISTERED PROFESSIONAL ENGINEER

DAVID P. WHITTON

No. 264397

STATE OF UTAH

09-29-08

ADENDUM #1

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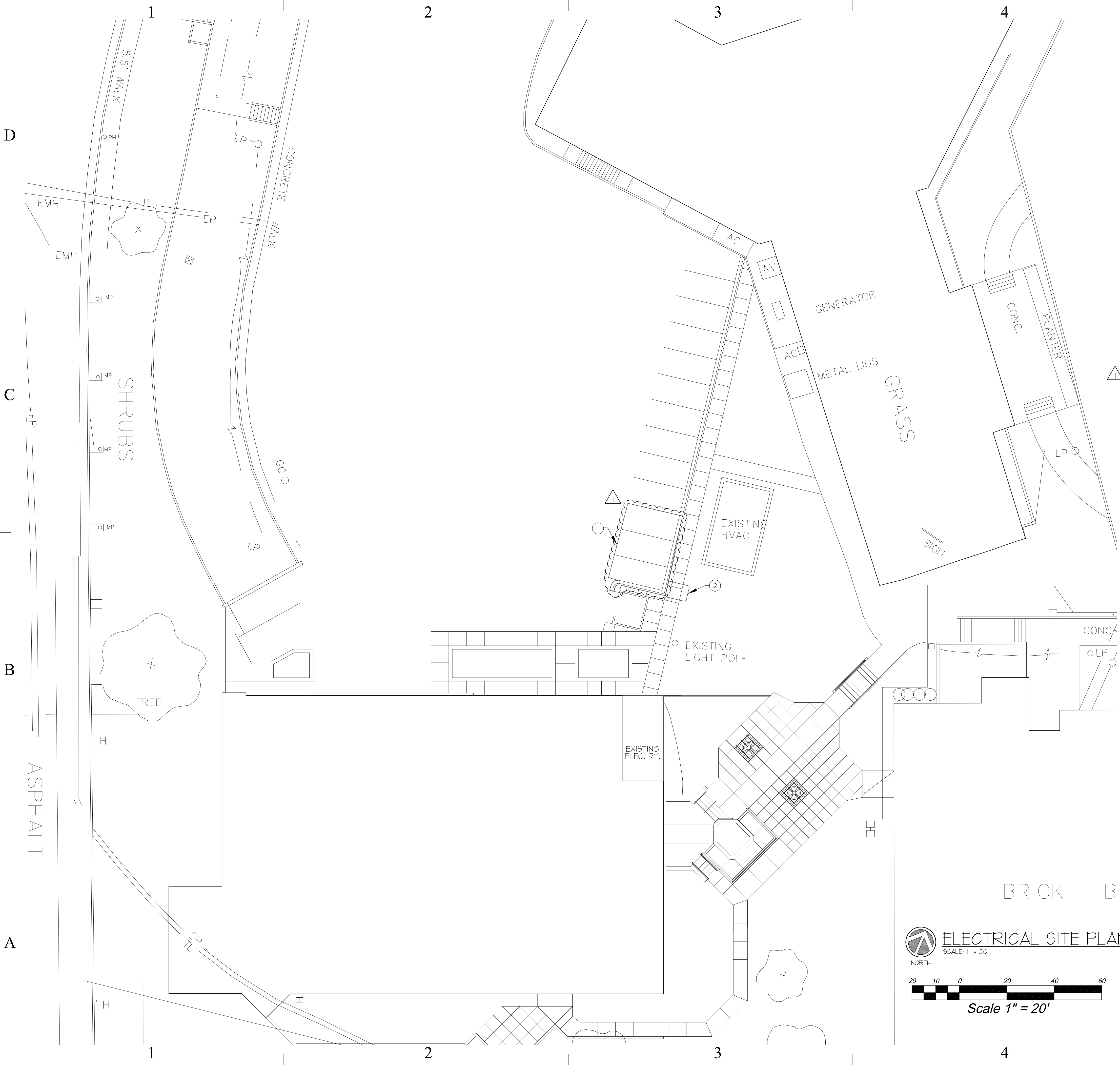
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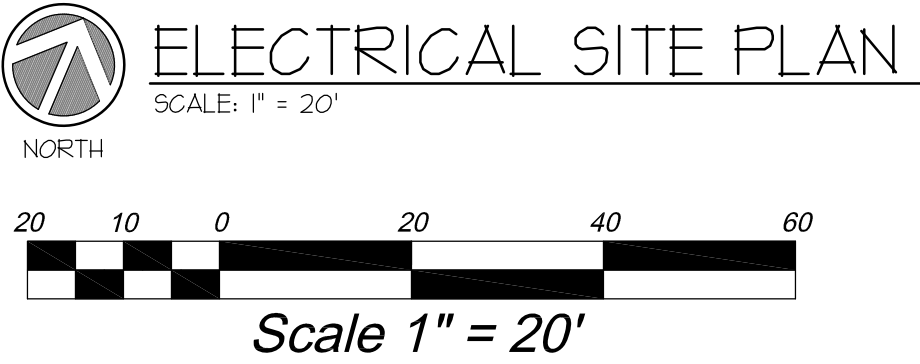
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SHEET 2 OF 10



- GENERAL DEMOLITION NOTES:**
- I. UNLESS SPECIFICALLY NOTED OTHERWISE, REMOVE ALL ELECTRICAL ITEMS SHOWN IN DARK & DASHED LINES. ITEMS SHOWN IN LIGHT & SOLID LINES ARE TO REMAIN. DEMOLITION ITEMS ARE SHOWN TO GIVE A BASIC DESCRIPTION OF THE EXTENT OF DEMOLITION WORK, BUT MAY NOT BE INCLUSIVE. PROVIDE DEMOLITION WORK IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
 - A. DISCONNECT AND REMOVE ANY/ALL FIXTURES, DEVICES, EQUIPMENT, ETC. REQUIRED FOR PROPER COMPLETION OF THE WORK WHETHER SHOWN OR NOT.
 - B. RELOCATE, REWIRE, AND/OR RECONNECT ANY/ALL FIXTURES, DEVICES, EQUIPMENT, ETC. THAT FOR ANY REASON OBSTRUCTS CONSTRUCTION.
 - C. LEAVE ALL EXISTING FIXTURES, DEVICES, EQUIPMENT, ETC. IN PORTIONS OF THE SITE NOT BEING REMODELED, IN WORKING CONDITION. RESTORE ALL INTERRUPTED BRANCH CIRCUITS, FEEDERS, ETC.
 - D. REMOVE AND DISPOSE OF ALL RACEWAYS, CONDUCTORS, BOXES, DEVICES, EQUIPMENT, ETC. THAT ARE NOT TO BE REUSED.
 - E. EXISTING RACEWAYS MAY BE REUSED, IF IN PLACE, WHERE POSSIBLE, AND WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND THE INTENT OF THE CONTRACT DOCUMENTS. UPGRADE AND OR PROVIDE NEW CONDUIT SUPPORTS WHERE NECESSARY FOR ALL RACEWAYS BEING REUSED. INSURE INTEGRITY OF EXISTING RACEWAYS BEFORE REUSE.
 - F. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOFS, ETC.
 - G. COORDINATE WITH OWNER WHAT EQUIPMENT SHOULD BE DISPOSED OF AND WHAT EQUIPMENT IS TO BE RETURNED TO OWNER.

- KEYED NOTES:**
- ① SAW CUT AND REMOVE EXISTING CURB, GUTTER AND ASPHALT AS NECESSARY TO INSTALL INFRASTRUCTURE FOR NEW GENERATOR. DISPOSE OF DEMOLISHED MATERIAL IN A LEGAL MANNER.
 - ② REMOVE THIS SECTION OF SIDEWALK TO ALLOW FOR FEEDERS TO BE RAN FROM THE NEW GENERATOR TO NEW ELECTRICAL EQUIPMENT.



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FIRST FLOOR DEMOLITION PLAN

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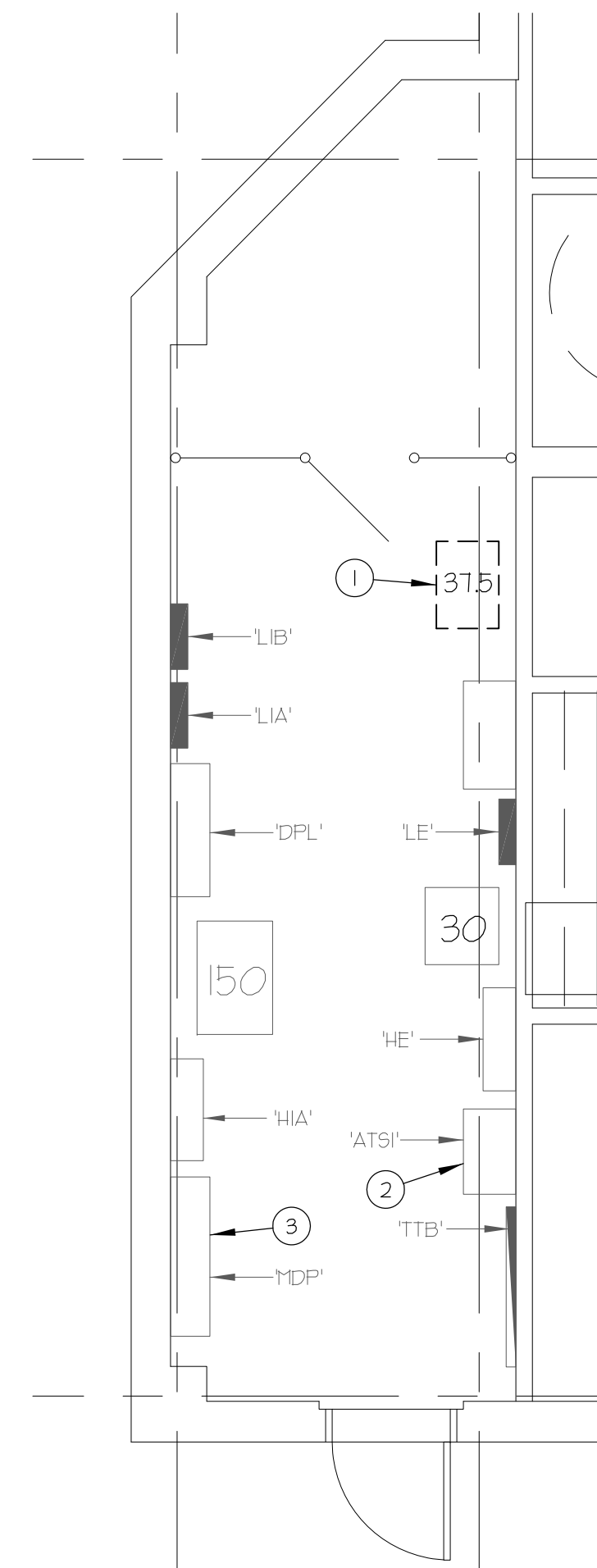
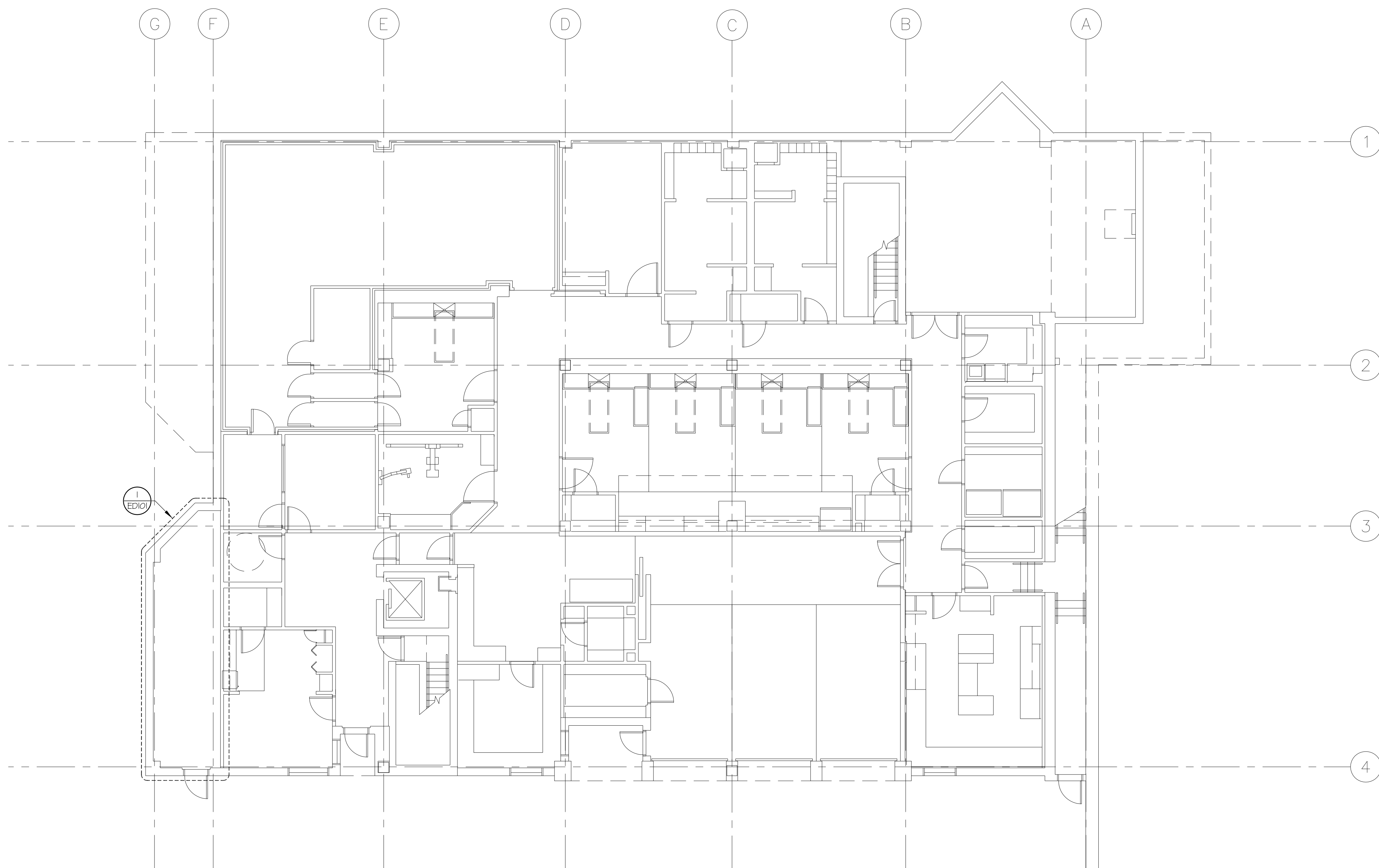
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SHEET 4 OF 10

- ① EXISTING 375 KVA TRANSFORMER TO BE DISCONNECT AND MOVED TO NEW LOCATION. ASSOCIATED BRANCH FEEDER TO BE REMOVED AND MODIFIED AS NECESSARY. REFER TO SHEET EPI01 FOR ADDITIONAL INFORMATION.
- ② REMOVE EXISTING BRANCH FEEDER FROM 'ATS' BACK TO EXISTING 'MDP' AND 'HE' COMPLETE. WHERE CONDUIT EXTEND UNDERGROUND, THAT PORTION MAY BE ABANDONED IN PLACE. THE CONTRACTOR SHALL CUT CONDUIT FLUSH WITH THE FINISHED GRADE AND FILL THE CONDUIT IN WITH CONCRETE SAND MIX. REFER TO SHEET EDP01 FOR ADDITIONAL INFORMATION.
- ③ SELECT BRANCH FEEDERS FROM 'MDP' FEEDING SELECTED DISTRIBUTION EQUIPMENT SHALL BE REMOVED COMPLETE. ASSOCIATED CONDUIT THAT EXTENDS UNDERGROUND SHALL BE ABANDONED IN PLACE. REFER TO THE DEDUPLICATION ONE-LINE DIAGRAM ON SHEET EDP01 FOR ADDITIONAL INFORMATION.

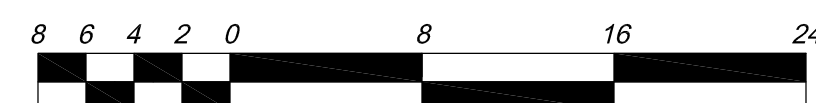
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- C. LEAVE ALL EXISTING FIXTURES, DEVICES, EQUIPMENT, ETC. IN PORTIONS OF THE SITE NOT BEING REMODELED, IN WORKING CONDITION. RESTORE ALL INTERRUPTED BRANCH CIRCUITS, FEEDERS, ETC.
- D. REMOVE AND DISPOSE OF ALL RACEWAYS, CONDUCTORS, BOXES, DEVICES, EQUIPMENT, ETC. THAT ARE NOT TO BE REUSED.
- E. EXISTING RACEWAYS MAY BE REUSED, IF IN PLACE, WHERE POSSIBLE, AND WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND THE INTENT OF THE CONTRACT DOCUMENTS. UPGRADE AND OR PROVIDE NEW CONDUIT SUPPORTS WHERE NECESSARY FOR ALL RACEWAYS BEING REUSED. INSURE INTEGRITY OF EXISTING RACEWAYS BEFORE REUSE.
- F. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOFS, ETC.
- G. COORDINATE WITH OWNER WHAT EQUIPMENT SHOULD BE DISPOSED OF AND WHAT EQUIPMENT IS TO BE RETURNED TO OWNER.



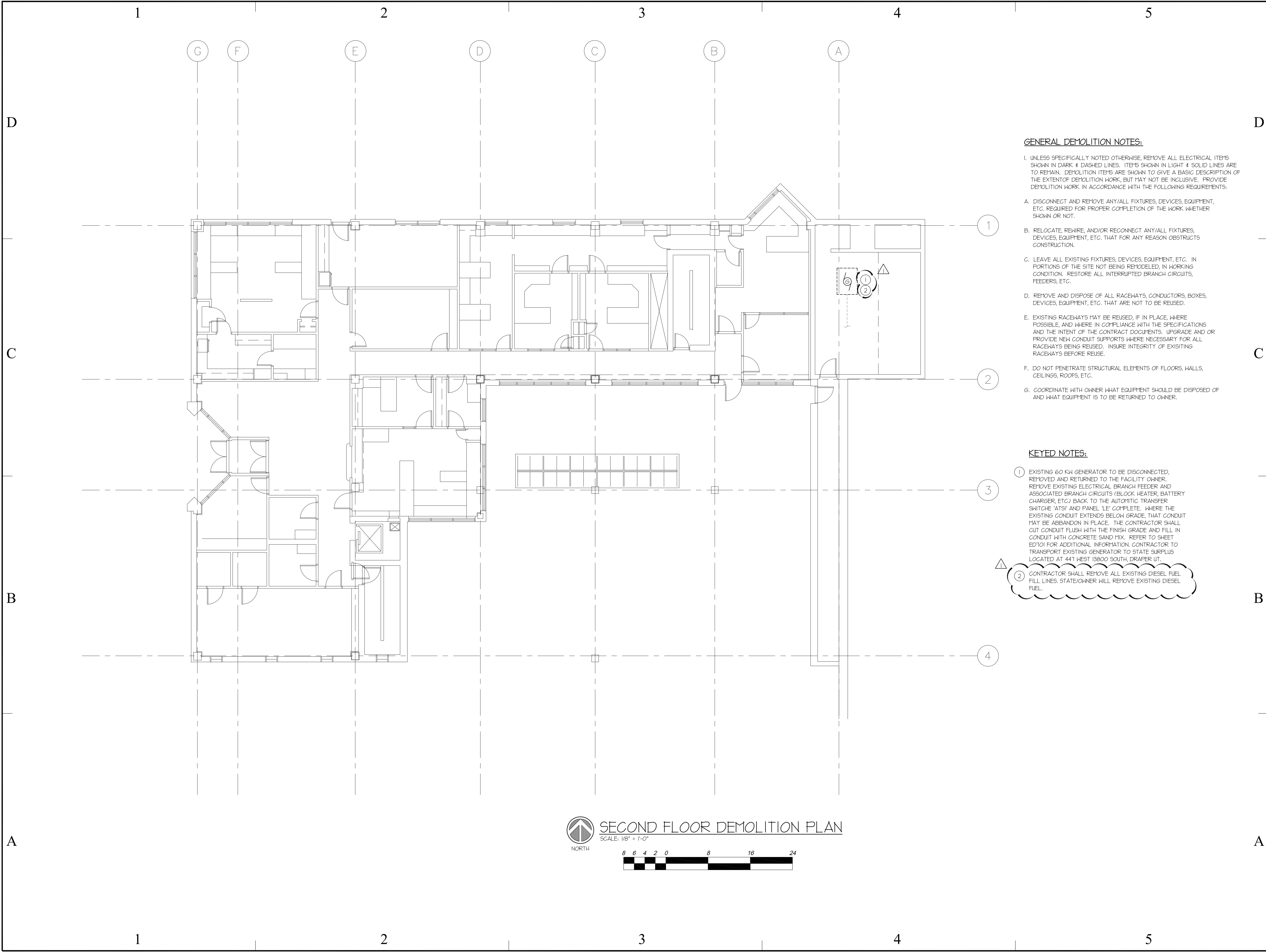
1) FIRST FLOOR DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



ELECTRICAL ROOM

SCALE: 1/4" = 1'-0"



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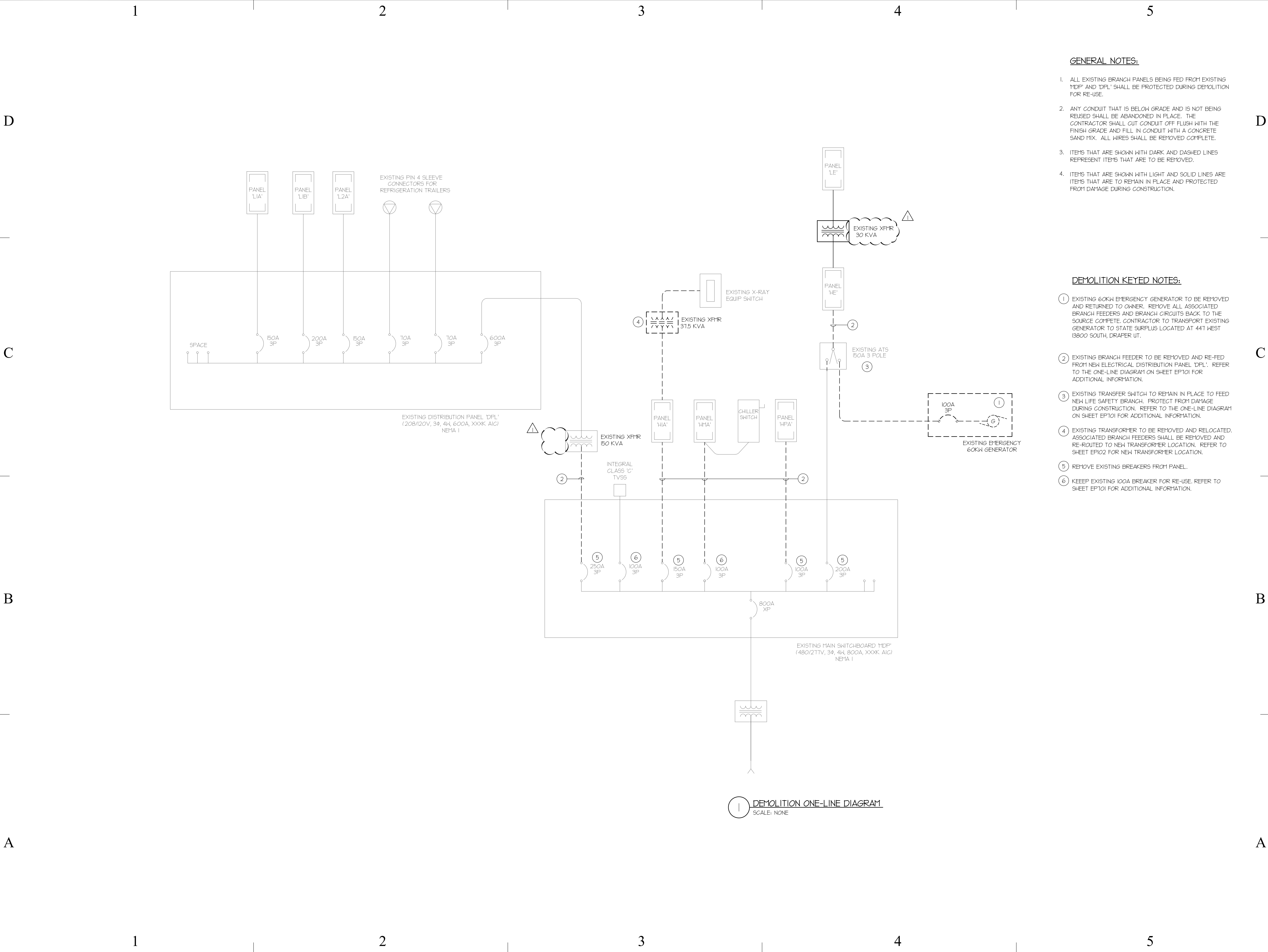
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SECOND FLOOR DEMOLITION PLAN		
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GENERAL NOTES:

1. ALL EXISTING BRANCH PANELS BEING FED FROM EXISTING 'MDP' AND 'DPL' SHALL BE PROTECTED DURING DEMOLITION FOR RE-USE.
2. ANY CONDUIT THAT IS BELOW GRADE AND IS NOT BEING REUSED SHALL BE ABANDONED IN PLACE. THE CONTRACTOR SHALL CUT CONDUIT OFF FLUSH WITH THE FINISH GRADE AND FILL IN CONDUIT WITH A CONCRETE SAND MIX. ALL WIRES SHALL BE REMOVED COMPLETE.
3. ITEMS THAT ARE SHOWN WITH DARK AND DASHED LINES REPRESENT ITEMS THAT ARE TO BE REMOVED.
4. ITEMS THAT ARE SHOWN WITH LIGHT AND SOLID LINES ARE ITEMS THAT ARE TO REMAIN IN PLACE AND PROTECTED FROM DAMAGE DURING CONSTRUCTION.

DEMOLITION KEYED NOTES:

1. EXISTING 60KW EMERGENCY GENERATOR TO BE REMOVED AND RETURNED TO OWNER. REMOVE ALL ASSOCIATED BRANCH FEEDERS AND BRANCH CIRCUITS BACK TO THE SOURCE COMPETE. CONTRACTOR TO TRANSPORT EXISTING GENERATOR TO STATE SURPLUS LOCATED AT 441 WEST 13800 SOUTH, DRAFER UT.
2. EXISTING BRANCH FEEDER TO BE REMOVED AND RE-FED FROM NEW ELECTRICAL DISTRIBUTION PANEL 'DPL'. REFER TO THE ONE-LINE DIAGRAM ON SHEET EPT01 FOR ADDITIONAL INFORMATION.
3. EXISTING TRANSFER SWITCH TO REMAIN IN PLACE TO FEED NEW LIFE SAFETY BRANCH. PROTECT FROM DAMAGE DURING CONSTRUCTION. REFER TO THE ONE-LINE DIAGRAM ON SHEET EPT01 FOR ADDITIONAL INFORMATION.
4. EXISTING TRANSFORMER TO BE REMOVED AND RELOCATED. ASSOCIATED BRANCH FEEDERS SHALL BE REMOVED AND RE-ROUTED TO NEW TRANSFORMER LOCATION. REFER TO SHEET EPT02 FOR NEW TRANSFORMER LOCATION.
5. REMOVE EXISTING BREAKERS FROM PANEL.
6. KEEEP EXISTING 100A BREAKER FOR RE-USE. REFER TO SHEET EPT01 FOR ADDITIONAL INFORMATION.



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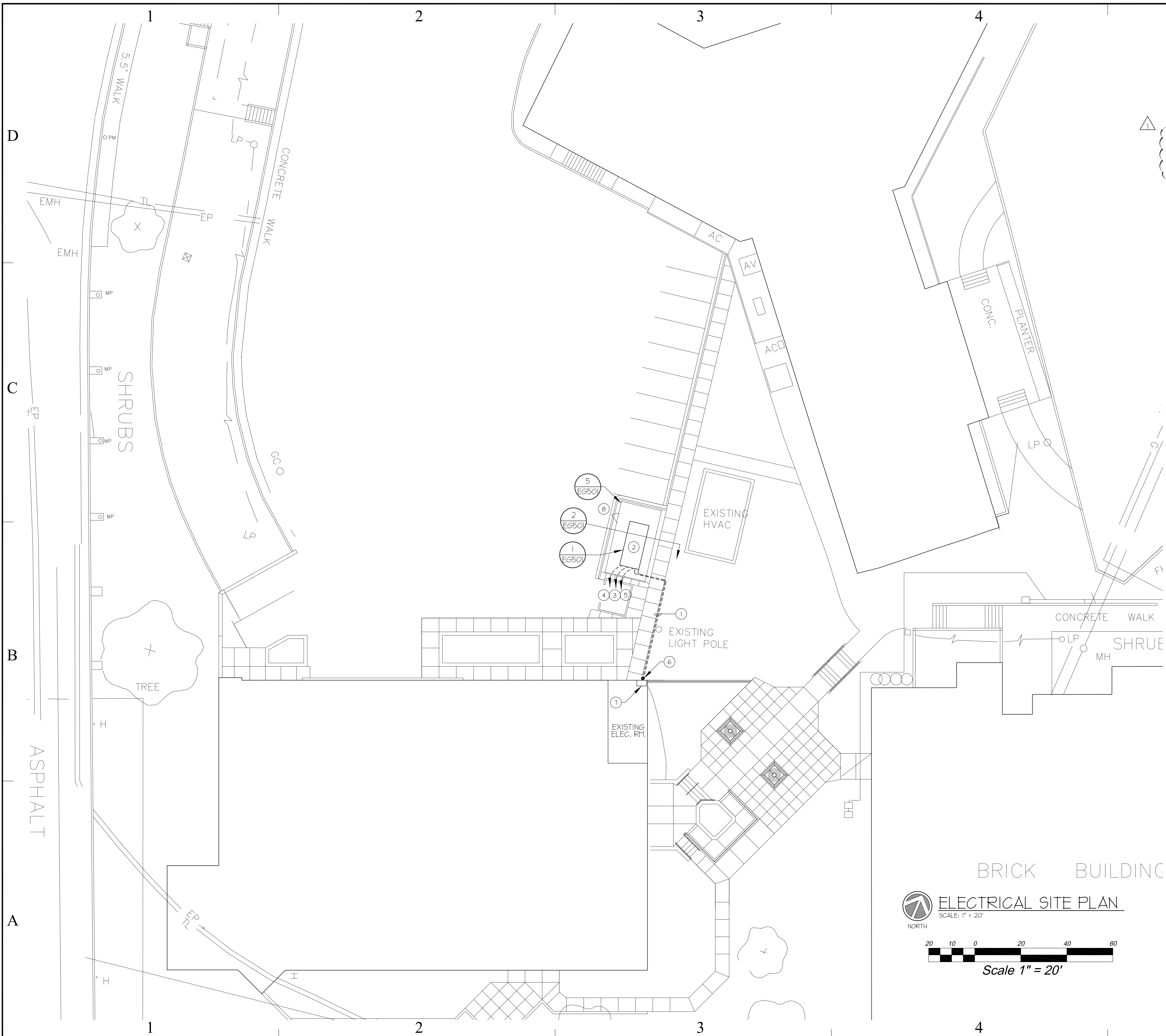
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DEMOLITION
ONE-LINE
DIAGRAM

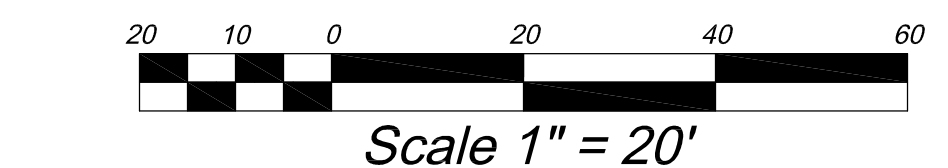
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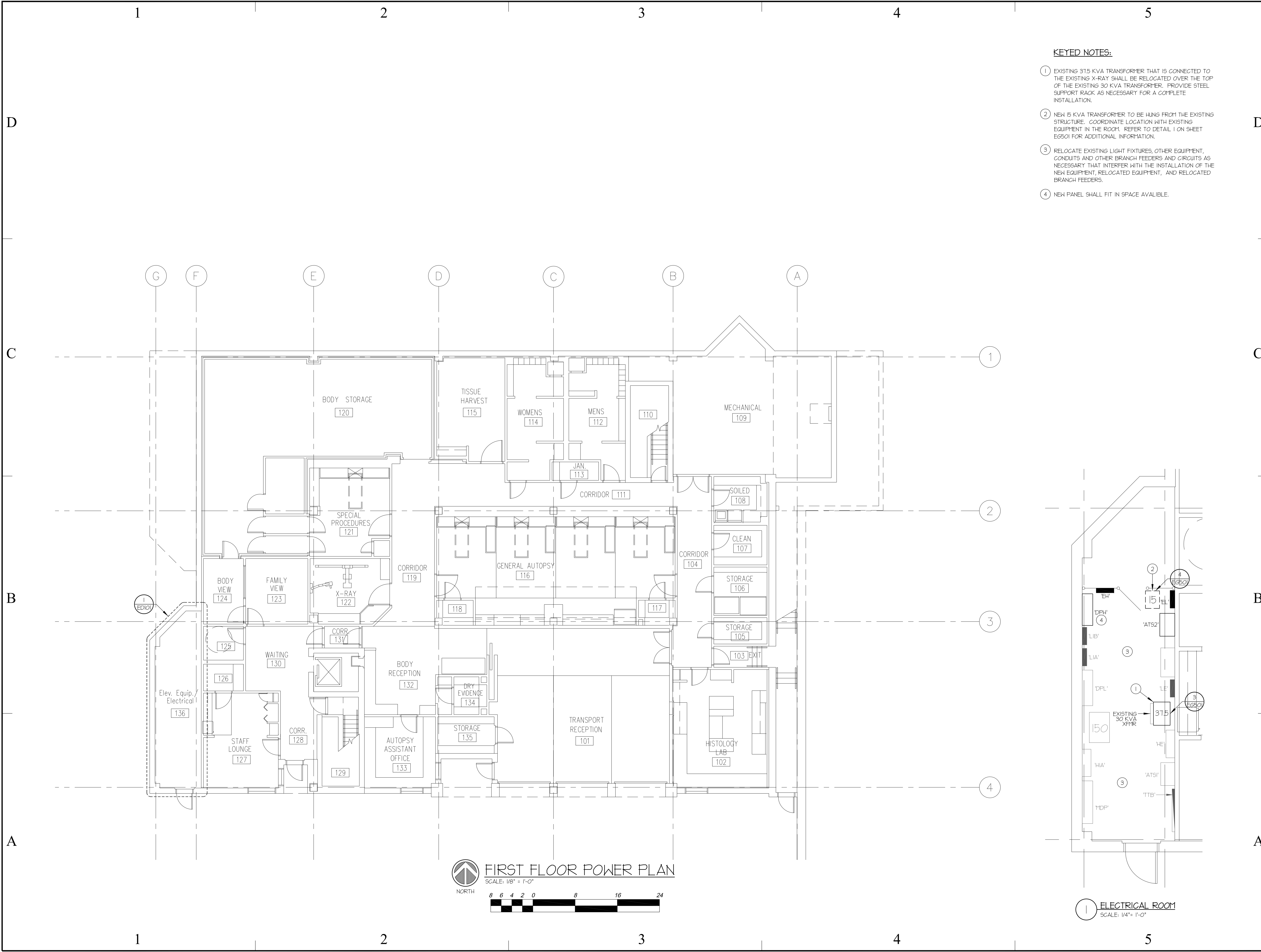
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 ELECTRICAL SITE PLAN
SCALE: 1" = 20'

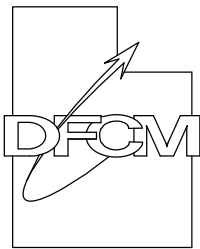




KEYED NOTES:

- EXISTING 315 KVA TRANSFORMER THAT IS CONNECTED TO THE EXISTING X-RAY SHALL BE RELOCATED OVER THE TOP OF THE EXISTING 30 KVA TRANSFORMER. PROVIDE STEEL SUPPORT RACK AS NECESSARY FOR A COMPLETE INSTALLATION.
- NEW 15 KVA TRANSFORMER TO BE HUNG FROM THE EXISTING STRUCTURE. COORDINATE LOCATION WITH EXISTING EQUIPMENT IN THE ROOM. REFER TO DETAIL 1 ON SHEET E6501 FOR ADDITIONAL INFORMATION.
- RELOCATE EXISTING LIGHT FIXTURES, OTHER EQUIPMENT, CONDUITS AND OTHER BRANCH FEEDERS AND CIRCUITS AS NECESSARY THAT INTERFERE WITH THE INSTALLATION OF THE NEW EQUIPMENT, RELOCATED EQUIPMENT, AND RELOCATED BRANCH FEEDERS.
- NEW PANEL SHALL FIT IN SPACE AVAILABLE.

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CREATED BY: DFCM



COMPUTER AIDED DESIGN SERVICES
DOCUMENT MANAGEMENT
DESIGN - DRAFTING - STANDARDS
PLOTING - SCANNING

4110 STATE OFFICE BUILDING
SALT LAKE CITY, UTAH 84114
PHONE: (801) 537-9132
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BUILDING NAME:

**STATE MEDICAL
EXAMINER'S OFFICE**

PROJECT TITLE:

**STATE MEDICAL
EXAMINER'S OFFICE -
GENERATOR UPGRADE**



09-29-08 ADENDUM #1

MARK	DATE	DESCRIPTION
		ISSUE TYPE: -

ISSUE DATE: - 6-26-08

DFCM PROJECT NO: 08081390

CAD PROJECT NO:

CAD DWG FILE: 2008-092.00

DRAWN BY: - ALH

CHK'D BY: - DW

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SHEET TITLE

**FIRST FLOOR
POWER PLAN**

SHEET NUMBER

EP101

SHEET 8 OF 10

D

C

B

A

1

2

3

4

5

LIGHTING AND APPLIANCE PANELBOARD SCHEDULE

PANEL NAME: HE TYPE: NF

CIRCUIT BREAKERS: ☒ BOLT ON
☐ PLUG ON

277 / 480 VOLTAGE 3 PH 4 W

☒ ENGRAVED NAME TAGS

BUS MATERIAL: ☐ ALUM BUS
☐ CU BUS

GROUND: ☐ GROUND BUS
☐ ISOL GND BUS

NEUTRAL: ☐ 100%
☐ 200%

LUGS: ☐ MAIN
☐ SUB-FEED
☐ FEED-THROUGH

MAIN BREAKER: ☐ AMPS
BUS AMPS:

BRANCH BREAKERS

NOTES	ITEM	AMP	POLE	WIRE SIZE	CIR. NO.	LEFT PHASE LOAD			RIGHT PHASE LOAD			CIR. NO.	AMP	POLE	WIRE SIZE	ITEM	NOTES
						A	B	C	A	B	C						
	PANEL 'LE'	50	3	6	1	10520			1200	1200		2	20	3	10	CU-1	
	-	-	-	-	3		10520					4	-	-	-	-	
	-	-	-	-	5			10520		1200		6	-	-	-	-	
	SPARE	20	1		7				1590		8	20	1	12	EMERGENCY LIGHTING	(2)	
	SPARE	20	1		9						10	20	1		SPARE		
	SPARE	20	1		11						12	20	1		SPARE		
	SPARE	20	1		13						14	20	1		SPARE		
	SPARE	20	1		15						16	20	1		SPARE		
	SPARE	20	1		17						18	20	1		SPARE		
						10520	10520	10520	2190	1200	1200						
						1390	11720	11720	TOTAL								
						48	42	42	AMPS / PHASE								

FRONT: ☒ STANDARD
☐ HINGED
☐ DOOR-IN-DOOR

MOUNTING: ☐ FLUSH
☐ SURFACE
☐ SURFACE W/ SKIRT ABOVE
☐ SURFACE W/ SKIRT BELOW

TVSS: ☒ NONE
☐ CATEGORY '1'
☐ CATEGORY '2'
☐ CATEGORY 'A'

NEHA RATING: ☒ NEHA 1
☐ NEHA 3R
☐ NEHA 4X
☐ NEHA 12
☐ STAINLESS STEEL

TOTAL CONNECTED LOAD: 36750

SHORT CIRCUIT RATING: ☐ SERIES - RATED
☐ FULLY - RATED

22,000 AMPS RMS 5111

REFER TO ONE-LINE DIAGRAM FOR FEEDER , CONDUIT AND CONDUCTOR SIZES

LIGHTING AND APPLIANCE PANELBOARD SCHEDULE

PANEL NAME: EH TYPE: NF

CIRCUIT BREAKERS: ☒ BOLT ON
☐ PLUG ON

277 / 480 VOLTAGE 3 PH 4 W

☒ ENGRAVED NAME TAGS

BUS MATERIAL: ☒ ALUM BUS
☐ CU BUS

GROUND: ☒ GROUND BUS
☐ ISOL GND BUS

NEUTRAL: ☒ 100%
☐ 200%

LUGS: ☐ MAIN
☐ SUB-FEED
☐ FEED-THROUGH

MAIN BREAKER: ☒ AMPS 125

BUS AMPS: 125

BRANCH BREAKERS

NOTES	ITEM	AMP	POLE	WIRE SIZE	CIR. NO.	LEFT PHASE LOAD			RIGHT PHASE LOAD			CIR. NO.	AMP	POLE	WIRE SIZE	ITEM	NOTES
						A	B	C	A	B	C						
	EMERGENCY LIGHTING	20	1		12	1	1590					2	20	1		SPACE	
	SPARE	20	1		3							4	20	1		SPACE	
	SPARE	20	1		5							6	20	1		SPACE	
	SPARE	20	1		7							8	20	1		SPACE	
	SPARE	20	1		9							10	20	1		SPACE	
	SPARE	20	1		11							12	20	1		SPACE	
	SPARE	20	1		13							14	20	1		NEW X-FR	
	SPARE	20	1		15							16	20	1		SPACE	
	SPARE	20	1		17							18	20	1		SPACE	
						1590	0	0	2000	1000	1000						
						3540	1000	1000	TOTAL								
						13	4	4	AMPS / PHASE								

FRONT: ☒ STANDARD
☐ HINGED
☐ DOOR-IN-DOOR

MOUNTING: ☐ FLUSH
☐ SURFACE
☐ SURFACE W/ SKIRT ABOVE
☐ SURFACE W/ SKIRT BELOW

TVSS: ☒ NONE
☐ CATEGORY '1'
☐ CATEGORY '2'
☐ CATEGORY 'A'

NEHA RATING: ☒ NEHA 1
☐ NEHA 3R
☐ NEHA 4X
☐ NEHA 12
☐ STAINLESS STEEL

TOTAL CONNECTED LOAD: 5590

SHORT CIRCUIT RATING: ☐ SERIES - RATED
☒ FULLY - RATED

22,000 AMPS RMS 5111

REFER TO ONE-LINE DIAGRAM FOR FEEDER , CONDUIT AND CONDUCTOR SIZES

LIGHTING AND APPLIANCE PANELBOARD SCHEDULE

PANEL NAME: LE TYPE: N00D

CIRCUIT BREAKERS: ☒ BOLT ON
☐ PLUG ON

120 / 208 VOLTAGE 3 PH 4 W

☒ ENGRAVED NAME TAGS

BUS MATERIAL: ☐ ALUM BUS
☐ CU BUS

GROUND: ☐ GROUND BUS
☐ ISOL GND BUS

NEUTRAL: ☐ 100%
☐ 200%

LUGS: ☒ MAIN
☐ SUB-FEED
☐ FEED-THROUGH

MAIN BREAKER: ☒ AMPS 100

BUS AMPS: 100

BRANCH BREAKERS

NOTES	ITEM	AMP	POLE	WIRE SIZE	CIR. NO.	LEFT PHASE LOAD			RIGHT PHASE LOAD			CIR. NO.	AMP	POLE	WIRE SIZE	ITEM	NOTES
						A	B	C	A	B	C						
	UC-1 EAST	20	1	12	1	515			515	515		2	20	2	12	SPARE	
	UC-1 WEST	20	1	12	3		515					4	-	-	-	-	
	UC-2	20	1	12	5			460		1030		6	20	2	12	UC-3	
	FREEZER HEAT TAPE	20	1	12	7	460			1030		8	-	-	-	-	-	
	UC-4 NORTH	20	1	12	9		200			200		10	20	1	10	SPARE	
	RECEOTACLE	20	1	12	11			120		1790		12	20	1	12	REFRIG.	
	RECEOTACLE	20	1	12	13	500			800		14	20	1	12	REFRIG.		
	DROP CORD	20	1	12	15		1000			180		16	20	1	12	REFRIG. R-1	
	DISPOSAL D-1	20	1	12	17			1200		1030		18	20	2	12	CU-2	
	VIEWBOXES	20	1	12	19	120			1030		20	-	-	-	-	-	
	SH	40	1	8	21		2640			50		22	20	1	12	LIGHTING	
	FREEZER	20	1	12	23			1800		1000		24	20	1	12	SC-1, RECEPT	
	FREEZER	20	1	12	25	1800			800		26	20	1	12	DR-1		
	ACCESS DOORS	20	1	12	27		500			1000		28	20	1	12	TELEPHONE BOARD	(1)
(1)	FA PANEL	20	1	12	29			500		1500		30	20	1	12	BLOCK HEATER	(1)
(1)	FIRE SHUTTER	20	1	12	31	500			1500		32	20	1	12	TANK WATER		
	SPARE	20	2	-	33					500		34	20	1	12	BATTERY CHARGER	(1)
	SPARE	-	-	-	35						36	20	1		SPACE		
	SPARE	20	2	-	37						38	20	1		SPACE		
	SPARE	-	-	-	39						40	20	1		SPACE		
	UC-4 SOUTH	20	1	12	41						42	20	1		SPACE		
						3455	4915	4680	5135	2505	6350						
						4690	1420	11030	TOTAL								
						81	62	92	AMPS / PHASE								

FRONT: ☒ STANDARD
☐ HINGED
☐ DOOR-IN-DOOR

MOUNTING: ☐ FLUSH
☒ SURFACE
☐ SURFACE W/ SKIRT ABOVE
☐ SURFACE W/ SKIRT BELOW

TVSS: ☐ NONE
☐ CATEGORY '1'
☐ CATEGORY '2'
☐ CATEGORY 'A'

NEHA RATING: ☒ NEHA 1
☐ NEHA 3R
☐ NEHA 4X
☐ NEHA 12
☐ STAINLESS STEEL

TOTAL CONNECTED LOAD: 28140

SHORT CIRCUIT RATING: ☐ SERIES - RATED
☐ FULLY - RATED

10,000 AMPS RMS 5111

REFER TO ONE-LINE DIAGRAM FOR FEEDER , CONDUIT AND CONDUCTOR SIZES

LIGHTING AND APPLIANCE PANELBOARD SCHEDULE

PANEL NAME: EL TYPE: NF

CIRCUIT BREAKERS: ☒ BOLT ON
☐ PLUG ON

120 / 208 VOLTAGE 3 PH 4 W

☒ ENGRAVED NAME TAGS

BUS MATERIAL: ☒ ALUM BUS
☐ CU BUS

GROUND: ☒ GROUND BUS
☐ ISOL GND BUS

NEUTRAL: ☒ 100%
☐ 200%

LUGS: ☐ MAIN
☐ SUB-FEED
☐ FEED-THROUGH

MAIN BREAKER: ☒ AMPS 100

BUS AMPS: 100

BRANCH BREAKERS

NOTES	ITEM	AMP	POLE	WIRE SIZE	CIR. NO.	LEFT PHASE LOAD			RIGHT PHASE LOAD			CIR. NO.	AMP	POLE	WIRE SIZE	ITEM	NOTES
						A	B	C	A	B	C						
	FIRE ALARM PANEL	20	1	12	1	500						2	20	1		SPACE	
	FIRE SHUTTER	20	1	12	3		500					4	20	1		SPACE	
	TELEPHONE BOARD	20	1	12	5			1000				6	20	1		SPACE	
	BLOCK HEATER	20	1	12	7	1500						8	20	1		SPACE	
	BATTERY CHARGER	20	1	12	9		500					10	20	1		SPACE	
	SPARE	20	1		11							12	20	1		SPACE	
	SPARE	20	1		13							14	20	1		SPACE	
	SPARE	20	1		15							16	20	1		SPACE	
	SPARE	20	1		17							18	20	1		SPACE	
						2000	1000	1000	0	0	0						
						2000	1000	1000	TOTAL								
						11	8	8	AMPS / PHASE								

FRONT: ☒ STANDARD
☐ HINGED
☐ DOOR-IN-DOOR

MOUNTING: ☐ FLUSH
☒ SURFACE
☐ SURFACE W/ SKIRT ABOVE
☐ SURFACE W/ SKIRT BELOW

TVSS: ☒ NONE
☐ CATEGORY '1'
☐ CATEGORY '2'
☐ CATEGORY 'A'

NEHA RATING: ☒ NEHA 1
☐ NEHA 3R
☐ NEHA 4X
☐ NEHA 12
☐ STAINLESS STEEL

TOTAL CONNECTED LOAD: 4000

SHORT CIRCUIT RATING: ☐ SERIES - RATED
☒ FULLY - RATED

22,000 AMPS RMS 5111

REFER TO ONE-LINE DIAGRAM FOR FEEDER , CONDUIT AND CONDUCTOR SIZES

GENERAL NOTES:

- ELECTRICAL CONTRACTOR SHALL VERIFY ALL CIRCUITS THAT ARE TO BE MOVED FROM BRANCH PANELS 'HE' AND 'LE' TO NEW BRANCH PANELS 'EH' AND 'EL' PRIOR TO REMOVAL.

KEYED NOTES:

- REMOVE EXISTING CIRCUIT TO PANEL EL.
- REMOVE EXISTING CIRCUIT TO PANEL EH.

PANEL LEGEND

HE	EH
LE	EL

D

C

B

A